



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/853,076      | 12/18/2000  | Jonathan R. Ross     | 79,167              | 5791             |

7590 07/29/2004

Office of Counsel Code OC4  
Naval Surface Warfare Center  
Indian Head Division  
101 Strauss Ave., Bldg. D-326  
Indian Head, MD 20640-5035

EXAMINER

SHARON, AYAL I

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2123

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/853,076 | <b>Applicant(s)</b><br>ROSS ET AL. |  |
|                              | <b>Examiner</b><br>Ayal I Sharon     | <b>Art Unit</b><br>2123            |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 2,3,9 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Introduction***

1. Claims 1-14 of U.S. Application 09/853,076 filed on 12/18/2000 are presented for examination.
2. In an amendment filed 5/6/04, Claims 1 and 13 have been amended in to overcome the previously presented 35 U.S.C. §112 rejections.
3. After performing an updated search, the Examiner found better prior art. The previous art rejections have been withdrawn, and the new art has been applied. This action is non-final.
4. New 35 U.S.C. §112 rejections, to claims 8 and 10, have been applied.

### ***Claim Interpretations***

5. Examiner interprets "simulating" and "simulant" according to the definition of the term "simulate" in Webster's Revised Unabridged Dictionary, © 1996, 1998 MICRA, Inc., as follows:

To assume the mere appearance of, without the reality; to assume the signs or indications of, falsely; to counterfeit; to feign.

Therefore, the term "simulate" is not restricted to the computer-related arts.

6. Examiner interprets "grain" as corresponding to "propellant". See the cited Nowlicki reference, "2. Solid Propellant Rockets".

***Claim Objections***

7. Claims 2-3 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and all intervening claims.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 8 and 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 8 and 10 include the limitation "substantially". The term "substantially" is indefinite. Claim 11 is dependant upon Claim 10.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. The prior art used for these rejections is as follows:

Art Unit: 2123

12. Hodges, Peter. U.K. Patent Application GB 2,187,267. Published Sept. 3, 1987. (Henceforth referred to as "**Hodges**").

13. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

**14. Claims 1, 4-8 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hodges.**

15. In regards to Claim 1, Hodges teaches the following limitations:

1. A temperature simulating device for simulating the propellant temperature within ordnance wherein the propellant has thermal properties and a cross-sectional area and the ordnance has housing, comprising:

a propellant assembly comprising:

(Hodges, especially: Fig.3; p.1 Abstract; and p.2, line 123 to p.3, line 45)

a grain simulant having thermal properties, being inert, wherein the thermal properties of the grain simulant approximate the thermal properties of the propellant;

(Hodges, especially: p.1 Abstract; and p.2, line 123 to p.3, line 45. The grain simulant is sand.)

means for measuring temperature imbedded into the grain simulant;

(Hodges, especially: Fig.3, Item 24 "temperature sensors"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

means for recording temperature data connected to the temperature measuring means; and,

(Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

means for housing the propellant assembly wherein the housing means simulate the housing of the ordnance.

(Hodges, especially: Fig.3, Item 21 "container"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

16. In regards to Claim 4, Hodges teaches the following limitations:

4. The temperature simulating device of claim 2, comprising a plurality of temperature measuring means imbedded into the grain simulant.

(Hodges, especially: Fig.3, Item 24 "temperature sensors"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

Art Unit: 2123

17. In regards to Claim 5, Hodges teaches the following limitations:

5. The temperature simulating device of claim 4, comprising four temperature measuring means imbedded into the grain simulant.

(Hodges, especially: Fig.3, Item 24 "temperature sensors"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

Hodges expressly teaches the use of "one or more temperature sensors" (see p.3, lines 22-25).

18. In regards to Claim 6, Hodges teaches the following limitations:

6. The temperature simulating device of claim 4, wherein the temperature measuring means comprise thermocouples.

(Hodges, especially: Fig.3, Item 24 "temperature sensors"; p.3, lines 57-76)

19. In regards to Claim 7, Hodges teaches the following limitations:

7. The temperature simulating device of claim 1, further comprising a grain simulant cross-sectional area approximate to the propellant cross-sectional area. (Hodges, especially: p.2, line 123 to p.3, line 45;)

Hodges expressly teaches that "The arrangement comprises a container 21 which may be formed of a shell case of the type used for the real ammunition ..." (see p.2, lines 127-130). It is inherent that if the shell casings are the same size, the cross sectional areas will be the same as well.

20. In regards to Claim 8, Hodges teaches the following limitations:

8. The temperature simulating device of claim 7, further comprising first and second ends of the grain simulant and an insulating material substantially covering the first and second ends.

(Hodges, especially: Fig.3, Item 23 "baffles"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

21. In regards to Claim 12, Hodges teaches the following limitations:

12. The temperature simulating device of claim 8, further comprising:

an external power source for the temperature recording means connected to an end plate; and,

Art Unit: 2123

(Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

An external power source is inherent to a computer.

data output connections for the temperature recording means connected to an end plate.

(Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

Fig.3 shows the connection of a data output connection to an end plate. Items 38 and 40 are connected to this data output connection.

22. In regards to Claim 13, Hodges teaches the following limitations:

13 A method of simulating the temperature of the propellant temperature within ordnance wherein the propellant has thermal properties and a cross-sectional area and the ordnance has housing, comprising the steps of:

providing a device comprising a propellant assembly comprising a grain simulant having thermal properties, being inert, wherein the thermal properties of the grain simulant approximate the thermal properties of the propellant,

(Hodges, especially: p.1 Abstract; and p.2, line 123 to p.3, line 45. The grain simulant is sand.)

means for measuring temperature imbedded into the grain simulant, (Hodges, especially: Fig.3, Item 24 "temperature sensors"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

means for recording temperature data connected to the temperature measuring means, and, (Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

means for housing the propellant assembly wherein the housing means simulate the housing of the ordnance; (Hodges, especially: Fig.3, Item 21 "container"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

providing means for data accessing for data compiled by the temperature recording means: and, (Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

initiating the data accessing means.

Art Unit: 2123

(Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

23. In regards to Claim 14, Hodges teaches the following limitations:

14. The method of simulating temperature of claim 13, wherein the data accessing means comprises a location remote to the device.

(Hodges, especially: Fig.3, Item 38 "ballistics computer"; p.1 Abstract; and p.2, line 123 to p.3, line 45.)

***Response to Amendment filed 5/6/2004***

24. Applicants have amended claims 1 and 13 to remove the term

"substantially", in order to overcome the rejections based on 35 U.S.C.

§112. Examiner has therefore withdrawn the rejections.

25. Examiner has withdrawn the previous art rejections and applied new art.

26. Applicant's first argument (pp.5-6), is that "Once these ingredients [fuel, oxidizer, binder material] are combined, it is physically impossible to 'remove' the fuel and oxidizer from a propellant grain" is no longer relevant. Hodges uses sand as the simulant.

27. Applicant's second argument (p.6) is that "... even if were possible to remove the fuel and oxidizer as the examiner suggests, the binder ingredient would not be anywhere near large enough to simulate an entire propellant grain within the rocket motor" is no longer relevant. Hodges uses sand as the simulant.

28. Applicant's third argument is that (p.6) is that "... the binder would be in a liquid or gel state (basically not useable for the present invention)" is no longer relevant. Hodges uses sand as the simulant.



Art Unit: 2123

29. Finally, Applicant's fourth argument (pp.6-7) is that "Nothing in either reference states or implies that an inert material ... can simulate the temperature profile of a propellant grain." Hodges expressly refers to the use of an "explosively inert material 22, such as sand" (See p.2, line 129 to p.3, line 4).

### ***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is

(703) 306-0297. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on (703) 305-9704. Any response to this office action should be mailed to:

Director of Patents and Trademarks  
Washington, DC 20231

Hand-delivered responses should be brought to the following office:

4<sup>th</sup> floor receptionist's office  
Crystal Park 2  
2121 Crystal Drive  
Arlington, VA 22202

Fax: (703) 872-9306

Art Unit: 2123

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is:  
  
(703) 305-3900.

Ayal I. Sharon

Art Unit 2123

July 22, 2004



KEVIN J. TESKA  
SUPERVISORY  
PATENT EXAMINER